Benhao Huang

✎ huskydoge.github.io

✉ hbh001098hbh@sjtu.edu.com

⌂ https://github.com/huskydoge

EDUCATION

- **Shanghai Jiao Tong University** — Shanghai, China
  Bachelor of Engineering, Electronic Information (IEEE pilot class) — *Sept 2021 - Current*
  - ▸ **Overall GPA**: 92.66/100.00, 4.04/4.30, (Rank 6/129)
  - ▸ **Selected Courses**:
    Computer Science: Design and Analysis of Algorithms (A+), Principles and methods of program design (A+), Programming Practice (A+), Computer Network (A+)
    Mathematics: Mathematical Analysis (A+), Linear and Convex Optimization (A+), Information Theory (A+), Complex Analysis (A+), Probability Statistics (A+)
  - ▸ **Additional Academic Pursuit**: Engaged in a dual degree program in Mathematics and Applied Mathematics. Coursework includes: Complex Analysis, Abstract Algebra, Linear Algebra II

PUBLICATIONS

- **Defining and Extracting Generalizable Interaction Primitives from DNNs** (🗎 Paper)
  *Lu Chen, Siyu Lou, **Benhao Huang**, Quanshi Zhang*
  The International Conference on Learning Representations (ICLR 2024)

EXPERIENCE

- **SJTU-XAI-Lab** — Shanghai, China
  Undergraduate researcher, supervised by Prof. Quanshi Zhang. — *Feb 2023 - Current*
  - ≡ Artificial Intelligence Interpretability
  - ▸ **DNN Interactions Extraction Project**
    - ○ Given different DNNs trained for the same task, developed a method to extract their shared interactions.
    - ○ By conducting contrast experiments, we showed that the extracted interactions can better reflect common knowledge shared by different DNNs.
    - ○ I helped design the algorithm that balanced the generalization ability and sparsity of model interactions.

PROJECTS

- **Chinese Slot Language Understanding** — Shanghai, China
  CS3602 Natural Language Processing — *Dec 2023*
  - ○ Developed a BERT-based pipeline for Chinese slot understanding.
  - ○ Incorporated Lexicon information into the BERT backbone and achieved an improved result (from 77.99% to 79.44% in accuracy) on the given noisy dataset. ⌂ GitHub 🗎 Report

- **AAPMT: AGI Assessment Through Prompt and Metric Transformer.** — Shanghai, China
  CS3324 Digital Image Processing — *Dec 2023*
  - ○ Developed a interralationship-based AGI metrics evaluation system allowing for the simultaneous evaluation of multiple AGI metrics.
  - ○ Designed and implemented "Metric Transformer", where attention mechanism is applied to calculate each of metric jointly. ⌂ GitHub 🗎 Report

- **TranBlend: An Experimental Fusion of Textual Input in Saliency Prediction Models** — Shanghai, China
  CS3324 Digital Image Processing — *Dec 2023*
  - ○ Developed a model to simulate the text descriptions' influence on human's attention on images reflecting by saliency maps.
  - ○ Blended image features from ViT and text features from BERT using cross-attention to enhance the performance of TransalNet. ⌂ GitHub 🗎 Report

- **Adaptive Huffman Coding: Analysis and Applications** — Shanghai, China
  ICE2601 Information Theory Course Project — *May 2023*
  - ○ Further enhanced the incremental Huffman strategy by adaptive Huffman coding to train Continuous Bag of Words (CBOW) model faster and better. ⌂ GitHub 🗎 Report 🗎 Slides

- **Shanghai Jiao Tong University Classroom Information Website** — Shanghai, China
  ICE2604 Introduction to Software Engineering Course Project — *Dec 2022*

- Developed a website to help students find comfortable study spaces at SJTU.
- Used Vue2 as the frontend framework, Elasticsearch and Logstash as the search engine, ECharts for data visualization. ⊙ GitHub ⊞ Demo

- **SNAKE Game: Pixel**   Shanghai, China
  CS1605 Programming and Practice Course Project   *July 2022*
  - Designed a SNAKE Game using C++ pdcourses.lib.
  - Implemented some interesting game props such as "Rewarding Time" and "Freezing Speed" as well as AI Snake mode. ⊙ GitHub ℗ Slides ⊞ Demo

Honors and Awards

Rui Yuan-Hong Shan scholarship (Rank 3/129)	*2023*
Academic Excellence Scholarship of SJTU (top 10%)	*2022,2023*
Shao Qiu scholarship (Rank 5/129)	*2022*
Mathematical Contest In Modeling (Meritorious Winner)	*2022*

Miscellaneous

- **Programming**
  - Proficient: Python (PyTorch, NumPy, Manim, etc.), C/C++, LaTeX
  - Familiar: MATLAB, HTML/CSS, JavaScript, Vue, Linux, Shell , Verilog

- **Service**

Member of the Outreach Department, SJTU Spark Program	*Oct 2021 - Sept 2022*
Member of Academic Department, SJTU Student Backbone Training Program	*Feb 2023 - Sept 2023*
Student Mentor of CS2601 Convex Optimization, SJTU	*Oct 2023 - Feb 2024*
Student Mentor of CS2612 Programming Languages and Compilers, SJTU	*Oct 2023 - Feb 2024*